



**SECRET**S-E-C-R-E-T

50X1-HUM

The UKT-1 combine is intended for operations in slightly dipping seams from 0.45 to 0.7 meter thick. The design of the machine is based on a completely new operating principle. It does not have separate cutting and loading units; both units are handled by an original shearing unit. The machine is simple, durable, and compact and well adapted to operations in the limited space of thin, slightly dipping coal seams.

The guiding runner of the combine can be detached from one side of the machine and attached to the other side. Then the cutting unit is adjusted to work in the opposite direction. The cutting bar has to turn in such a way that it moves toward the mine face at the upper part of the face and away from it at the lower part. Because of this, the bits not only cut the coal seam but also deliver coal from the mine face to the conveyor.(2)

Tests of the UKT-1 combine were successfully made in mines of the Rostovugol', Stalinugol', and Voroshilovgradugol' combines.(1) Results for the Rostovugol' and the Stalinugol' combines are given as follows:

1. The principle on which the design of the combine is based -- removal of coal from the mine face and loading it onto the conveyor -- worked out well in actual practice.

2. Coal mining with the UKT-1 combine considerably increased the output. This is proved by comparing figures for the UKT-1 combine with those of the KMP-1 cutting machine. At Vostochnaya Mine Face No 8 of the Stalinugol' Trust of the Stalinugol' Combine, the UKT-1 combine was able to complete 35 cycles during October 1950. coal output was 3,509 tons, labor productivity per shift of the cutting unit operators was 8.41 tons, and labor productivity per shift of the workers along the mine face was 3.2 tons. At Vostochnaya Mine Face No 2 of the same mine, using a KMP-1 cutting machine, the best figure for labor productivity per shift of the cutting unit operators was 4.48 tons and that for workers along the mine face, 2.19 tons. In addition, 20 fewer cutting and loading personnel were engaged at Vostochnaya Mine Face No 8 than at Vostochnaya Mine Face No 2.

Thus, labor productivity where the UKT-1 was used was twice as high for operators of the cutting unit and 60 percent higher for workers at the mine face. On those days when a cycle was completed in a shift (two cycles in 24 hours), productivity per worker at the mine face amounted to 4 tons. This productivity was achieved by a combine whose cutting unit had a penetration depth of 1.2 meters.(2) The Kharkov Svet Shakhtera Plant is engaged in series production of the new machine (1) and in 1951, will issue a consignment of the UKT-1 constructed on the base of the KMP-1 cutting machine and with a cutting unit having a penetration depth up to 1.45 meters. As a result, the output per cycle will be increased 20 percent and the productivity per worker at the mine face will be raised to 5 tons.

3. The simplicity of the design of the combine ensures its easy operation. The first experimental model worked for 9 months without any breakdowns.

4. The shuttle-like method of operation of the combine eliminates idle movement of the machine.

5. The productivity of the SKT2-6 conveyor limits the productivity of the UKT-1 combine. When the speed of the combine was greater than 0.4 meter per minute, the conveyor became heaped up with coal and was unable to take any more from the combine. To assure normal working conditions for the UKT-1 combine, a bigger conveyor must be designed as soon as possible.

6. Organization of work became easier at faces using combines than at faces using cutting machines, since drilling boreholes and shooting were eliminated when the combine was used. The absence of blasting and the smaller number of mine workings improved the condition of the roof.

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7. Timber consumption was reduced 20 percent, since props were removed with the transfer of the conveyer and used for a second time.

8. Production costs of one ton of coal were reduced 5 rubles, even during the period of experimentation with the combine.

9. Very little coal dust is formed at mine faces where UKT-1 combines are used. If the coal has to be sprayed at all, it is only at one point, the place where it is loaded onto the conveyer. Only a small amount of water is required for this purpose and mud is not formed at the mine face.

10. The methane content is lower at a mine face where the UKT-1 combine is used than where a cutting machine is used. The combine cuts a layer of coal and loads it immediately onto the conveyer, that is, it removes the coal to a fresh current of air and the methane is absorbed evenly by this fresh current. At a mine face of Mine No 30 of the Stalinugol' Trust, the methane content at the mine face amounted to 4 - 8 percent when a cutting machine was used but dropped to one percent when the UKT-1 combine was used.

11. The average amount of power consumed by the combine ranges from 8.3 to 26.3 kilowatts, depending on the speed of the machine, which may vary from 0.20 to 0.78 meter per minute. The load on the electric motor during normal functioning is relatively even.

Thus the UKT-1 combine gives a thoroughly efficient performance. It assures complete mechanization of cutting coal from the mine face and loading it on the conveyer in the case of slightly dipping seams from 0.45 to 0.7 meter thick. It lightens the miners' work, increases labor productivity, and opens up new possibilities for increasing the output of coking coal from thin seams. (2) In March 1951, A. D. Gridin, Ye. I. Kudryashov, A. A. Pichugin, and I. Ya. Burtsev have been awarded Stalin First Prizes for designing and introducing the new combine. (1, 2)

#### SOURCES

1. Moscow, Vechernyaya Moskva, 16 Mar 51
2. Moscow, Mekhanizatsiya Trudoyemkikh i Tyazhelykh Rabot, No 4, 1951

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